

DURHAM. Equatoreal and Mer. Circle. (Prof. Chevallier and Rev. M. Thompson.)

1848.	Greenwich M.T.	R.A.	Comp <sup>d</sup> —Obs <sup>d</sup> .	N.P.D.	Comp <sup>d</sup> —Obs <sup>d</sup> .	Obs.
	<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>s</sup>	<sup>o</sup> <sup>'</sup> <sup>"</sup>	<sup>"</sup>	
Sept. 18	10 25 47.0	22 11 19.61	+ 1.59			Mer.
	11 1 58.2	19.36	1.70	101 55 9.0	- 7.5	1
19	8 3 37.7	11 14.94	1.31	101 55 35.8	7.6	4
	10 21 45.5	14.08	1.65	40.6	9.5	Mer.
Oct. 9	9 1 34.0	9 40.38	1.55	102 4 14.3	7.5	—
24	8 1 50.0	8 54.93	1.65	8 20.8	11.5	—
25	7 57 51.9	8 52.72	1.75	8 28.9	8.5	—
Nov. 7	7 6 28.7	8 36.19	1.98	9 47.6	6.5	—
Dec. 4	5 20 54.5	9 12.27	1.78	6 10.9	9.1	—
5	6 30 15.9	9 15.53	1.80	102 5 50.2	7.5	6
22	6 46 25.1	10 27.27	2.18	101 58 59.9	7.6	6
28	5 50 33.6	11 0.90	1.55	55 52.5	6.5	4
1849.						
Jan. 15	6 13 48.3	13 1.00	1.42	44 40.1	8.3	2
17	6 14 2.9	22 13 15.12	+ 2.21	101 43 14.0	- 5.8	6

Corrected for parallax and refraction, and compared with Mr. Adams's *Ephemeris*.

The second observation on Sept. 18, and the first observation on Sept. 19, were made with the Fraunhofer Equatoreal, and the star of comparison was B.A.C. 7740. On Dec. 5th and the following days, *Neptune* was compared in like manner with B.A.C. 7821. The other observations were made in the meridian.

The positions of the stars have been assumed from the following mean places, for Jan. 1, 1848, as determined by meridian observations :—

	R.A.	N.P.D.	No. of Obs.
	<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>o</sup> <sup>'</sup> <sup>"</sup>	
B.A.C. 7740	22 4 10.29	101 48 46.8	4
7821	22 18 36.84	101 59 54.0	5

LASSELL'S SATELLITE OF NEPTUNE.

LIVERPOOL.

(Mr. Lassell.)

Greenwich M.T.	Position.	Obs.	Distance.	Obs.
	<sup>o</sup>		<sup>"</sup>	
1848, Aug. 19.51	220	estd.	18.01	5
28.47	38.5	3		
Sept. 12.46	221.3	1		
18.47	223.8	4	16.21	4

CAMBRIDGE, U.S.

(Professor W. C. Bond.)

1847.	Cambridge M. T.	Position.	C <sup>d</sup> —O <sup>d</sup> .	Distance.	C <sup>d</sup> —O <sup>d</sup> .	Obs.
	<sup>h</sup> <sup>m</sup>	<sup>o</sup>	<sup>o</sup>	<sup>"</sup>	<sup>"</sup>	
Oct. 25	7 45	230	+ 0.3	15.4	— 0.3	3
27	7 30	29	+ 5.4	13.6	+ 0.3	7
28	7 35	47	+ 3.2	14.9	— 0.4	9
30	7 0	218	— 3.7	15.6	— 1.4	3
Nov. 2	7 15	34	+ 1.8	14.0	+ 0.8	5

# *Eighth Satellite of Saturn (Hyperion).*

	Cambridge M.T.		Position.	C <sup>d</sup> —O <sup>d</sup> .	Distance.	C <sup>d</sup> —O <sup>d</sup> .	Obs.
1847.		<sup>h</sup> <sup>m</sup>	<sup>o</sup>	<sup>o</sup>	"	"	
Nov. 3	7	0	51	+ 0.6	12.6	+ 1.1	4
26	7	26	45	— 1.2	15.9	+ 0.2	15
1848.							
July 3	16	15	219	+ 4.1	16.2	+ 0.4	14
11	15	15	24	+ 3.5	12.0	— 0.4	2
21	15	0	234	— 5.8	16.2	— 0.5	5
Aug. 31	10	30	225	— 1.3	16.6	+ 0.2	14
Oct. 11	7	50	220	+ 0.6	16.4	— 0.1	6
12	10	10	245	— 2.2	9.6	— 0.1	3
20	9	54	41	+ 3.3	15.8	+ 0.5	11
23	7	50	221	+ 2.6	16.3	+ 0.1	10
28	8	0	212	— 3.7	11.2	+ 0.1	3
Nov. 1	7	0	221	— 2.8	16.5	— 0.7	4

The column headed C<sup>d</sup>—O<sup>d</sup> contains the differences between the Observed places and those Computed from the following orbit :—

Period                    5<sup>d</sup>.8752  
 Inclination                30°  
 Ascending Node        300° if the motion is *direct*.

Passage of Ascending Node, Oct. 30.37, 1848, Greenwich M.T.

Mean Distance 16".3

The mass of *Neptune* corresponding to this distance is =  $\frac{1}{19400}$ .

## EIGHTH SATELLITE OF SATURN (*Hyperion*).

CAMBRIDGE, U.S.		Equatoreal.	(Professor W. C. Bond.)	
Camb. M.S.T.		Distance from Saturn's Centre.	Camb. M.S.T.	Distance from Saturn's Centre.
1848. Sept. 19.56	<sup>d</sup>	+ 256"	Oct. 21.42	<sup>d</sup> — 206"
21.52		+ 220	23.42	— 178
22.44		+ 192	27.34	+ 88
23.38		+ 145	28.31	+ 136
28.38		— 156	Nov. 1.31	+ 248
Oct. 13.32		+ 202	2.30	+ 198
14.29		+ 152	3.31	+ 228
15.40		+ 92	1849. Jan. 12.29	— 132
20.31		— 187		

In the above table + indicates that the Satellite *follows Saturn*; and — that it *precedes* the Planet.

The following is an approximation to the orbit of *Hyperion*, computed by G. P. Bond :—

Period ..... 21.18 days  
 Mean Dist. ... 214"  
 Eccentricity 0.115  
 Epoch ..... 97° Jan. 1, 1849  
 Perisaturnium 295°

The plane of the orbit coincides nearly with that of the ring. It probably undergoes very considerable perturbations from the influence of *Titan*.